

Appendix 6

Vegetation Desired Plant Community

Vegetation communities (and their associated wildlife species) are in a constant state of flux. While communities develop towards a final mature state (climax), few communities either attain that point, or remain there long. Range scientists classify these progressive states as the early, mid, and late seral stages. Disturbances tend to move communities from later to earlier seral stages. Natural disturbance such as fire, flood, and drought move communities to earlier stages and renew the development cycle. The introduction of human caused disturbances has also influenced natural vegetation community development. Humans can directly manage vegetation to create or preserve a particular community or condition. A healthy landscape would include vegetation communities in different seral stages with varying degrees of disturbance. Typically a mosaic or mixture of early, mid, and late seral stages provides greater vegetation (and animal) diversity and habitat resiliency. Plant communities that are dominated by late seral stage vegetation typically are less diverse, more susceptible to catastrophic events and less able to tolerate change. The Desired Plant Community (DPC) for vegetation resources is the maintenance of a mosaic of early, mid, and late seral stages based on both maintaining the diversity of self sustaining native plant populations and providing for the habitat requirements of native wildlife.

The plant community descriptions in this DPC are based on the best available information. This includes the Utah Range Site Descriptions for major land resource areas 035 Colorado and Green River plateaus (April 1994), Soil Write Up Areas (SWA), and Monument reference areas. The most common range site descriptions in a given cover type (top 75% of area) were evaluated to create a range of cover values for vegetation functional groups. In addition, seral stages within frequently managed cover types were outlined and the percent contribution of each listed. Percentages of plant cover are based on canopy cover and not dry weight.

The vegetation classification is modified from the Utah Gap Analysis Project (Edwards et al. 1995), being merged and modified to match Monument Vegetation Types. These vegetation types have not been extensively verified and the number of acres should be used as a rough guide and not as absolute acreages.

The cover types and the number of acres of each are presented below. The most common cover type is the Pinyon-juniper cover type, occupying approximately 42% of the Monument. Cover types that are present in this table but not addressed in the DPC are water body, developed, and altered or disturbed lands.

Vegetation Cover Types

GSENM Vegetation Class*	Acres	% of Area
Altered or Disturbed Land Cover Types	12,742	0.55
Aspen	426	0.02
Barren Rock Outcrop	617,892	26.65
Blackbrush	269,382	11.62
Desert Shrub	166,882	7.20
Developed	1,010	0.04
Evergreen Forest	646	0.03
Grassland and Meadow	39,310	1.70
Mountain Shrub	271	0.01
Oak Woodland	6,868	0.30
Pinyon-Juniper	966,709	41.69
Ponderosa Pine/Douglas Fir	26,550	1.14
Riparian	11,898	0.51
Sagebrush Grassland	190,668	8.22
Seeding	5,768	0.25
Water Body	1,812	0.08
TOTAL	2,318,833	100

Specific DPC standards by vegetation cover type within the Grand Staircase-Escalante National Monument (Monument) follow.

ASPEN

Aspen plant communities occupy 426 acres (0.02%) of the Monument. Although aspen communities are a relatively minor component of the Monument flora, they are important because of their high species diversity and their value to wildlife. Because of their limited extent and high value, DPC will contain specific goals to maintain the health of these communities.

Quaking aspen is the dominant species in aspen stands and should occupy approximately 20-40% cover in mature stands. Aspen stands on the Monument have shown limited regeneration because of browsing and livestock grazing. To promote the health of these stands, an emphasis will be placed on encouraging recruitment of young age classes. All age classes of aspen should be present and saplings should be protected from excessive browsing by livestock or wildlife. At least 15% of the total aspen cover should be in young age classes such as seedling or sapling. No more than 60% of the total aspen cover should be in older age classes such as mature or decadent. Other species associated with aspen communities include Mountain snowberry, Bigtooth maple, Muttongrass, and Silvery lupine. Exotic and/or invasive species (invasives) often gain a foothold in aspen communities because of the ample soil moisture. Invasives will be controlled and monitored to ensure that they do not out-compete native species.

Treatment Goals:

Treatments that favor the regeneration of young aspen age classes and control invasion by evergreen trees will be encouraged. Treatments will be carefully designed to discourage the introduction or spread of invasive plant species. Treatment of these stands may be necessary if invasion from Pinyon-juniper is occurring. Use of fire to eliminate invading tree species or to stimulate regeneration is a treatment option. Fire should be used only on a small percentage of total aspen cover at any given time in order to mitigate the overall affects to wildlife in this small habitat type. Stands should also be monitored for the presence of disease within aspen. If disease outbreaks threaten these stands, then other treatment options should be considered. Protection of aspen stands with fencing or through reduction in browser/grazer populations will be given priority. Treatments that follow wildfire will contain seed mixes appropriate to the diversity and plant composition of aspen stands on the Monument. Any noxious or invasive weeds will be controlled and closely monitored.

Wildlife Habitat:

Aspen stands, though limited in extent, provide small islands of important habitat. These stands are located within, or adjacent to, sagebrush-grass and Pinyon-juniper dominated landscapes. It is critical to manage existing aspen stands to promote and preserve those mechanisms which provide for natural regeneration and the perpetuation of aspen within its historic extent. Aspen mainly regenerates by way of root sprouting and suckering. Management should allow for the protection of sprouts from grazing and browsing until they reach a height beyond the reach of grazing animals. It is also important to protect the associated trees, shrubs, and herbaceous vegetation within these stands from over utilization as well. Aspen provides important breeding habitat for a number of bird species, including Williamson's sapsucker. Game animals such as deer and elk also use these areas for browsing. Excess browsing by these animals can have the same negative affects to regeneration as livestock and should be monitored closely, especially if elk populates these areas.

Aspen Cover

Functional Group	Percent Cover Range	Common Species
Trees	20-40	Quaking aspen
Shrubs	10-40	Mountain snowberry, Bigtooth maple, Woods' rose, Big sagebrush
Grasses	10-30	Muttongrass, squirreltail grass, Wiregrass, Douglas' sedge
Forbs	5-20	Silvery lupine, Aspen bluebells, Indian paintbrush,
Biological soil crust	0-20	
Litter	10-40	
Bare Ground	0-10	
Exotics	0-10	

BLACKBRUSH

Blackbrush occupies 269,382 acres (12%) of the Monument. This cover type occurs primarily in the southern portion of the Monument and is interspersed with the barren rock outcrop cover type. Blackbrush occupies the lowest and/or driest portions of the Monument on non-saline soils of old pediment slopes and terraces with petrocalcic horizons or caliche layers. It can have a high degree of species richness but a low amount of replacement when disturbed, particularly after fire. The general objective for blackbrush communities is to protect blackbrush stands from disturbance effects and maintain sufficient native plant cover to protect from invasive weed dominance. Common species in blackbrush communities include blackbrush, galleta grass, and Indian pipeweed.

Treatment Goals:

Treatment of blackbrush stands should be considered on a site specific basis but generally discouraged, particularly if the goal is to shift composition or cover of existing species. Because blackbrush stands are susceptible to invasion by cheat grass and red brome, treatment should be limited unless it targets weed control. Fire should be avoided as a treatment method because it can result in very long recruitment times for blackbrush and can increase invasive weeds into this cover type.

Wildlife Habitat:

Management practices should preserve large contiguous blocks of scrublands for such species as ferruginous hawk, Brewer's sparrow, and sage sparrow. Livestock management schemes should be adopted that reduce the introduction and spread of cheatgrass and other non-native species. Management activities would preserve native shrub, grass, and forb species for birds and prey animals such as rodents and jack rabbits. Where needed, restoration would provide for an increase in understory native grasses and forbs to benefit wildlife habitat characteristics. Concentrated livestock use would be avoided and restoration practices during bird nesting season would not occur.

Blackbrush Cover

Functional Group	% Cover Range	Common species
Trees	0	
Shrubs	30-60	Blackbrush, Shadscale, Four-wing saltbush, Broom snakeweed
Grasses	15-50	Galleta grass, Indian ricegrass, Sand dropseed, Squirreltail grass
Forbs	5-15	Indian pipeweed, Gooseberry leaf globemallow, Spreading skyrocket, Flat crown wild buckwheat
Biological soil crust	5-30	
Litter	5-25	
Bare ground	20-50	

BARREN ROCK OUTCROP

Barren rock outcrop covers 617,892 acres (27%) in the Monument. This cover type includes a wide range of ecological sites with diverse soils varying from very sandy substrates to an array of thin soil types. Within this cover type are lava fields, rock outcrops, sand, salt flats, and playas that are largely devoid of vegetation. In order to accommodate the variety in vegetation within this cover type, DPC descriptions will be very general. More specific criteria will need to be developed on a site by site basis.

Plant communities of the barren rock outcrop are typically sparsely vegetated, often with less than 10% vegetation cover but occasionally up to 30%. Despite the limited cover, these areas often support many endemic species. Many endemic species in southern Utah are restricted to soils derived from a specific geologic formation and most occur in areas of exposed parent materials similar to the barren rock outcrop type. Therefore, general goals for the cover type should not focus on the percentage of vegetation in each functional group but instead on factors that ensure stability and resiliency of these plant communities. An emphasis should be placed on protecting these communities from exotic plant invasion. Exotic plant cover should comprise no more than 5% of the vegetation cover. Species composition is highly variable but may include Utah juniper, Shrub live oak, Indian ricegrass, and Gooseberry leaf globemallow.

Treatment Goals:

The goal of vegetation treatments should be to promote stability of the plant communities. Treatments that reduce the cover of invasive plant species should be prioritized. Mechanical treatments that shift general vegetation composition and cover will be considered on a site by site basis but will generally be discouraged. Because these sites receive minimal use from livestock due to their lack of forage and water, they have been relatively unaffected by grazing activities. However, recreation may be a disturbance factor and changes in use may be required to achieve DPC for this cover type.

Wildlife Habitat:

Manage habitat for the preservation of shrub species for the benefit of neotropical birds, deer, and small mammals. Land management practices will be adopted to prevent the invasion of exotic plants.

Barren Rock Outcrop Cover

Functional Group	Percent Cover Range	Common Species
Trees	0-20	Utah juniper, Pinyon pine
Shrubs	5-30	Shrub live oak, Bigelow sagebrush, Dwarf mountain mahogany and Mormon tea
Grasses	5-30	Indian ricegrass, Galleta grass, Sand dropseed, and Squirreltail grass
Forbs	5-10	Gooseberry leaf globemallow, Pale evening primrose, Crescent milkvetch, and Hairy false goldenaster.
Biological soil crust	0-40	
Litter	5-20	
Bare ground	20-60	
Exotics	0-5	

DESERT SHRUB

Desert Shrub communities comprise approximately 166,882 acres (7%) of the Monument. Several different shrub types are contained within this cover type, including Four-wing saltbush, Mat saltbush, and Mormon tea dominated sites. This cover type includes all dry, low elevation shrub types other than sagebrush and blackbrush types. Because of the variability within this cover type, ranges for DPC will appear large and site specific criteria will need to be developed if treatment is planned for a given area.

A primary goal for Desert Shrub communities is site stabilization in respect to soil loss and protection from invasive weeds. Many of the soils in this cover type are sandy in nature and susceptible to soil loss if adequate cover is not maintained. Perennial grasses are an important component in maintaining site stability and should constitute at least 20% or greater canopy cover. Shrub cover is somewhat variable depending on soil type but should be at least 10% canopy cover. Forbs should be at least 5% and tree cover is generally absent. Common species that occur in the desert shrub cover type are Four-wing saltbush, Indian ricegrass, and White-margined swertia.

Treatment Goals:

Treatment emphasis would be to reduce the proliferation of invasive annual plant species and improve soil functioning. Treatment that encourages native plant species cover and reduces soil erosion would be prioritized. Treatments that promote perennial grass and shrub cover would be the focus of restoration efforts.

Wildlife Habitat:

These areas are important habitat for neotropical birds, rodents, reptiles, rabbits, and occasional use by deer. Livestock management should result in the preservation of large blocks of shrub communities with a representative mix of native grasses and forbs in the understory. Concentrated livestock use should be avoided during bird breeding season. Natural water sources are critical to wildlife in these dry habitats and should be protected from damaging use by livestock. Some areas of desert shrub may be suitable for future establishment of pronghorn antelope populations which would depend upon a forb component in the shrub community. Pronghorn need patches of mature shrubs to use as cover during fawning. During the winter, their diet almost exclusively consists of browse species, especially sagebrush. A management objective should be the prevention or eradication of invasive plant species which compete with more desirable native species important for wildlife uses.

Desert Shrub Cover

Functional Group	% Cover Range	Common species
Trees	0	
Shrubs	20-50	Four-wing saltbush, Mormon tea, Winterfat, Mat saltbush
Grasses	20-40	Indian ricegrass, Galleta grass, Sand dropseed, Sandhill muhly
Forbs	5-10	White-margined swertia, Pale evening primrose, Desert trumpet, Fine leaf wooly white
Biological soil crust	0-20	
Litter	5-20	
Bare ground	20-50	

EVERGREEN FOREST

The Evergreen Forest community accounts for 646 acres (0.03%) in the Monument. This uncommon plant community typically occurs in mesic sites on steep lower slopes with northern aspects or in narrow canyons and ravines. Because of the inaccessibility, few impacts have affected this community type. Protection and maintenance of spruce-fir communities is the goal of the DPC for the type. Tree cover is variable but should range from 30-60%. A variety of age classes will be present with young age classes such as seedling and sapling representing at least 15% of the total tree cover. Understory species are site specific but should be dominated by native cool season grasses and forbs typical of more mesic sites. Common species of the Evergreen Forest plant community include White fir, Bigtooth maple, Mountain lover, and Fendler’s meadow rue.

Treatment Goals:

Evergreen forests should not be targeted for treatment unless burned by fire, damaged by insects, or invaded by exotic species. Treatments should focus on restoring the native species assemblages and controlling noxious and invasive weed species. Treatments should avoid ground disturbing activities that would allow invasive species to become established.

Wildlife Habitat:

To provide and maintain habitats for wildlife species which use this community, it is important to manage for a multi-age structure of both evergreen and deciduous tree species. An important component is the understory which provides for nuts and fruits for both mammals and birds. Riparian areas are critical to the needs of all wildlife species and should be carefully managed for good to excellent ecologic condition.

Evergreen Forest Cover

Functional Group	Percent Cover Range	Common Species
Trees	30-60	White fir, Engelmann spruce
Shrubs	10-40	Bigtooth maple, Mountain lover, Creeping mahonia, Gambel’s oak
Grasses	5-30	Mutton Grass, Slimstem Reed Grass, June Grass
Forbs	5-10	Fendler’s meadow rue, starry false solomon’s seal, Red alumroot
Biological soil crust	0-20	
Litter	10-50	
Bare ground	10-40	
Exotics	0-5	

GRASSLAND AND MEADOW

Grassland and Meadow plant communities occupy approximately 39,310 acres (2%) within the Monument. Management of this cover type will focus on maintenance or development of perennial grass dominated communities with minimal shrub or invasive components. Grassland communities in good ecological condition should be dominated by perennial bunchgrasses with sod forming grasses as subdominants. Grass canopy cover should be maintained at or increased to at least 25%. Shrub cover would remain low (less than 15%) to reduce competition with grass and forb species. Forbs would be maintained at or increased to at least 5% canopy cover. Common species of this cover type may include Basin big sagebrush, Sand dropseed, Indian ricegrass, and Gooseberry leaf globemallow.

Treatment Goals:

Treatment objectives will focus on restoring natural disturbance regimes and increasing native grass and forb cover. Grasslands would also be managed to prevent or reduce the proliferation of non-indigenous annual plants such as cheat grass and Russian thistle. Changes in livestock management may be used to favor perennial bunchgrasses over sod forming bunchgrasses. In areas that require treatment because of natural disturbance such as fire or as a result of invasive species, an emphasis should be placed on seeding with native perennial bunchgrasses that are highly competitive with cheatgrass and other weedy species. Treatment of grassland and meadow communities should also focus on diversity of growth forms to ensure resiliency. This may be achieved through seeding an array of species with differing yet complementary above and below ground structures.

Wildlife Habitat:

This cover type provides valuable habitat for a variety of wildlife species. Habitat is provided for the nesting and foraging of neotropical birds, rodents and other small mammals which provide a prey base for raptors and carnivores, and for pronghorn antelope. It is important to manage for the health and production of native perennial grasses and forbs as dominants and native shrubs as sub-dominants in this vegetation type. The maintenance of a standing cover crop following grazing is important to maintaining insect production for birds and cover for mammals, as well as providing nesting opportunities. Vegetation heights of 15-30 inches should be available within the vegetation mosaic in order to provide forage and fawn security areas for pronghorn. Forbs are of particular importance during pronghorn reproductive periods. Maximum forb production should be a management objective, along with the control or elimination of noxious and non-native plants. Restoration activities need to be scheduled during the non-breeding season, or limited in extent to cause little disruption to these processes.

Grassland and Meadow Cover

Functional Group	% Cover Range	Common species
Trees	0	Utah juniper may invade this site
Shrubs	5-15	Basin big sagebrush, Rubber rabbitbrush, Winterfat, Four-wing saltbush
Grasses	25-50	Sand dropseed, Indian ricegrass, Needle and thread grass, Blue grama
Forbs	5-10	Gooseberry leaf globemallow, Larkspur, Golden aster, Tufted evening primrose
Biological soil crust	5-20	
Litter	10-30	
Bare ground	10-40	
Exotics	0-5	

MOUNTAIN SHRUB

Mountain shrub communities occupy approximately 271 acres (0.01%) of the Monument. This plant community is relatively scarce, occurring on open rocky sites on foothill slopes or valley bottoms. Because most sites on the Monument are in good condition, maintenance of the health of these communities is the focus of mountain shrub DPC. Most of the dominant species of mountain shrub communities are adapted to fire and will resprout. Therefore, natural fire cycles should be restored in areas where this plant community is found and fire suppression activities discouraged. Vegetation cover ranges and species assemblages for mountain shrub communities are variable depending on substrate and the amount of snow accumulation. Generally, shrub cover should range from 20-50% with tree cover no more than 15%. Grasses should range from 10-30% and forbs should range from 5-15%. Common species found in the mountain shrub communities include Ponderosa Pine, Utah serviceberry, Muttongrass, and Lobeleaf grousel.

Treatment Goals:

Treatments that favor the persistence of shrub cover and exclusion of tree species will be favored with an emphasis on restoring the natural fire frequency. Treatments should encourage the establishment and maintenance of native grass and forb understory species. Ground disturbing treatments will be avoided to prevent the spread of noxious and invasive weed species.

Wildlife Habitat:

The general and treatment goals described above will adequately address habitat requirements for those species using this very limited cover type on the Monument. Species needs described under ponderosa pine, Pinyon-juniper, and sagebrush grasslands would also be applied here.

Mountain Shrub Cover

Functional Group	Percent Cover Range	Common Species
Trees	0-15	Ponderosa Pine, Douglas-fir, Utah juniper, Pinyon pine
Shrubs	20-50	Utah serviceberry, Mountain snowberry, Cliffrose, Greenleaf manzanita
Grasses	10-30	Muttongrass, Sandberg's bluegrass, Needle-and-thread grass, junegrass,
Forbs	5-10	Lobeleaf grousel, Phlox, Scarlet gilia, Arrowleaf balsam root
Biological soil crust	5-20	
Litter	5-20	
Bare ground	20-50	
Exotics	0-5	

OAK WOODLAND

Oak woodland comprises 6,868 acres (0.3%) of the Monument. Within the Monument, oak woodland is relatively stable and seral stage percentages were not developed. Emphasis will be placed on promoting vigorous and productive stands of Gambel’s oak within the oak woodland cover type. Healthy, diverse oak woodland communities would consist of a mosaic of several seral stages. In general oak woodland would be composed of a variety of different height structures and age classes, with a thriving complement of native grasses, forbs, and shrubs. Tree cover should be not more than 20%, shrub cover at least 10%, and grasses should occupy at least 15%. Forbs should achieve approximately 5% cover. Common species within the oak woodland cover type include Utah juniper, Gambel’s Oak, Indian ricegrass, and Wright’s birdbeak. More specific criteria will be established if a given area is selected for treatment or more fine scale management.

Treatment Goals:

Treatment in oak woodland vegetation communities would focus on maintenance of existing stands and protecting the community from juniper invasion. Treatment priority areas would be where juniper canopy cover exceeds 35%, perennial grasses and forbs are less than 10%, and bare ground exceeds 70%. Fire may be used as a management tool to encourage sprouting of oak stands and to decrease canopy cover of juniper and pinyon. Fire will not be used when there is potential for invasion of non native plant species, particularly cheat grass.

Wildlife Habitat:

Although small in extent, oak woodlands provide important habitat elements for a number of wildlife species. Land management activities should encourage the preservation, health, and vitality of oak woodlands where present. Oak woodlands provide an important wildlife food resource in the form of mast production (acorns) for small mammals, black bear, and turkey. Activities that result in oak sprouting can be employed to stimulate decadent stands. Invasion by Pinyon-juniper and non-native plants should be prevented or eradicated.

Oak Woodland Cover

Functional Group	Percent Cover Range	Common Species
Trees	5-20	Utah juniper, Pinyon pine
Shrubs	10-50	Gambel’s oak, Shrub live oak, Utah serviceberry, and Mormon tea
Grasses	15-30	Indian ricegrass, Galleta grass, Sand dropseed, and Needle-and-thread grass
Forbs	5-15	Wright’s birdbeak, Gooseberry leaf globemallow, Woolly milkvetch, and Sand wild buckwheat
Biological soil crust	5-30	
Litter	10-20	
Bare ground	30-60	
Exotics	0-5	

PINYON-JUNIPER

Pinyon-juniper woodlands comprise approximately 966,709 acres (42%) of the Monument. Because of the large extent of this cover type and the amount of natural variability, DPC will be very general in nature with an emphasis placed on maintaining diversity within the Pinyon-juniper cover type. Healthy, diverse woodland communities would consist of a mosaic of several seral stages. The mosaic would be comprised of Early (5%), Middle (25%), Late (25%), and Old (35%) seral stages with differing amounts of grass, forb, shrub, and tree cover in each. In general the seral stages would be composed of a variety of different height structures and age classes, with a thriving understory community of native grasses, forbs, and shrubs. Early seral stage communities would be composed primarily of native forbs and grasses with low tree and shrub cover. Middle seral stage communities would have increased dominance of shrub species with low to moderate densities of juniper and pinyon. Shrubs would be primarily in the young to mature age classes with little decadence. Tree canopies would be open with crowns that do not touch. The overall structure to the middle seral stage would be savanna in nature. Late seral stage communities would have an increase in shrub decadence, higher densities and later age classes of pinyon and juniper, touching tree crowns, and a decrease in the cover of understory grasses and forbs. Old seral stage communities would have an increase in the age of pinyon and juniper and a continued decrease in the understory of shrubs, grasses, and forbs. Common species within the Pinyon-juniper cover type include Utah juniper, Pinyon Pine, Utah serviceberry, Mexican cliffrose, Indian ricegrass, and Utah firecracker. Many Pinyon-juniper communities have changed from cool season grass dominated to warm season grass dominated. Late spring grazing has often facilitated this shift. Grazing strategies and restoration treatments would favor the establishment and maintenance of cool season grasses. Targets for each of the functional groups will reflect likely scenarios for each seral stage. More specific criteria will be established if a given area is selected for treatment or more fine scale management.

Treatment Goals:

Treatment objectives in the Pinyon-juniper vegetation communities would focus on restoring the natural disturbance regime, increasing vegetation ground cover of native grasses, forbs, and shrubs, and removing non-native invasive species. Cool season native grasses would be increased to more traditional levels. Treatments would favor a balance in age class distribution of shrub species, with no single age class dominant. Individual old growth trees would be maintained and protected during treatment implementation. Treatment priority areas would occur where juniper canopy cover exceeds 30%, perennial grasses and forbs are less than 10%, and bare ground exceeds 50%. Other areas will be treated as needed to fulfill mosaic objectives across the Monument.

Wildlife Habitat:

Stands of Pinyon-juniper would be managed for a balance between tree, shrub and perennial grass cover to support pinyon jay and mule deer. This mosaic would include stands of old growth Pinyon-juniper to support juniper titmouse; large openings of grasses, forbs and shrubs to support mule deer and provide foraging habitat for raptors such as sharpshin, goshawk, ferruginous hawk, Coopers hawk, American kestrel, and red tail hawk; and areas of sparse to dense tree canopy cover to support pinyon jay. Management should focus on maintaining habitat qualities for neotropical bird conservation. Management activities would ensure the potential grass and forb cover percentages in order to provide for healthy prey populations for raptors. Herbicides would be avoided in areas used by nesting neotropical birds, such as black-throated gray warblers, gray vireo, and Virginia's warbler. Treatments would provide for mosaic patterns of various age classes of Pinyon-juniper stands with various percent compositions of tree, shrub, and grass/forb species within the landscape. The use of control burns until after the nesting and fledging season would be limited. Grazing should be managed to maintain shrub and grass components. Grazing should be managed during the nesting period so as not to negatively impact neotropical breeding success.

Pinyon - Juniper Seral Stages and Cover

Seral Stage	Early Grass-Forb	Middle Grass/Forb/Shrub/Young PJ	Late Decadent shrub with PJ, decrease in understory	Old Old growth character, limited understory
Percent of Cover Type	5-15	15-30	30-40	30-40
Trees	0-5	5-10	10-25	25-50
Shrubs	0-30	30-60	25-45	15-30
Grasses	20-40	15-30	10-25	5-15
Forbs	5-20	5-10	5-10	0-5
Biological soil crust	5-20	5-30	5-25	5-20
Litter	5-25	5-20	5-15	5-10
Bare ground	20-40	30-60	40-60	40-70
Exotics	5-10	0-5	0-5	0-5

Common Species in Pinyon - Juniper Cover

Functional Group	Common Species
Trees	Utah juniper, Pinyon pine
Shrubs	Utah serviceberry, Mexican cliffrose, Big sagebrush, Torrey jointfir, Roundleaf buffaloberry
Grasses	Indian ricegrass, Galleta grass, Needle-and-thread grass, Sand dropseed, Threeawn
Forbs	Wright's birdbeak, Horned spurge, Woolly milkvetch, Scarlet globemallow, Utah firecracker

PONDEROSA PINE/DOUGLAS-FIR

Ponderosa/Douglas-fir woodlands comprise approximately 26,550 acres (1.14%) of the Monument. Though a relatively minor component, the Ponderosa pine/Douglas fir cover type is an important, diverse, and desirable vegetation element. Vegetation of this cover type is relatively stable and seral stage percentages were not developed, however stress should be placed on promoting viable and productive stands of Ponderosa Pine and Douglas-fir within their respective ecological niches. Healthy, diverse communities would consist of a mosaic of several seral stages. In general this cover type would be composed of a variety of different height structures and age classes, with a viable complement of native grasses, forbs, and shrubs. Common species include Ponderosa pine, Douglas-fir, Manzanita, Mutton grass, and Wallflower.

Treatment Goals:

Treatment objectives in the Ponderosa Pine/Douglas fir vegetation communities would focus on restoring the natural disturbance regime, increasing vegetation ground cover of native grasses, forbs, and shrubs, and removing invasive species. An emphasis would be placed on maintaining and protecting new seedlings and individual old growth trees during any treatment implementation. Treatments should focus on promoting a savanna-like understory composed of species adapted to the acidic soils produced by the abundant needle debris.

Wildlife Habitat:

Management practices should preserve large trees for such species as raptors and Lewis's woodpecker in order to provide perches, nesting, and foraging opportunities. Snags should be maintained. Livestock use should be managed to maintain understory vegetation for the benefit of prey species for raptors and insect production for neotropical birds. Management activities should provide for conifer recruitment and a diverse understory of shrub, grass, and forb species. Prescribed burns could be used to open canopies that are closed and to rejuvenate forest floor habitats components.

Ponderosa Pine Cover

Functional Group	% Cover Range	Common species
Trees	10-35	Ponderosa Pine, Douglas Fir, Rocky Mt. juniper, Pinon pine
Shrubs	5-40	Serviceberry, Manzanita, Snowberry, Bitterbrush, Mt. Mahogany
Grasses	1-2	Indian ricegrass, Squirreltail, Mutton Grass, Needle-and-thread grass
Forbs	1-5	Yarrow, Aster, Groundsel, Wallflower
Biological soil crust	5-15	
Litter	5-60	
Bare ground	10-30	

RIPARIAN

Riparian cover types occupy 11,898 acres (0.50%) of the Monument. Riparian areas would consist of a diversity of vertical and horizontal structures, vegetation age classes, and native species. Tree canopy would vary on site potential but may be up to 25%. Native shrub cover should be at least 10% and may be the dominant life form in many situations. Grass cover should be at least 40% and forbs may range from 5-10%. Ecological functions and processes would be intact with plant species composition and cover appropriate to the site. All riparian areas would be managed for proper functioning condition. Where possible, contiguous flowing water and associated riparian plant species composition and cover and would be provided by Lotic (river) systems. Availability of surface water at seeps and springs would be appropriate for the soil type, climate, and landform and would support a diverse population of native plant and wildlife species. Species assemblages in this cover type are variable based upon seasonality of water but may include Fremont’s cottonwood, Coyote willow, Scratchgrass, and Yellow monkeyflower.

Treatment Goals:

The focus of treatment activities in riparian communities would be to reduce or eliminate non-native species, especially Tamarisk and Russian olive, and restore proper amounts of willows and cottonwood. A focus should be placed on maintaining or restoring proper soil function, stabilizing banks, and retaining enough water in the system (at least 50% of natural flows) to maintain riparian vegetation.

Wildlife Goals:

The majority of wildlife species on the Colorado Plateau are dependent for at least part of their life cycle on riparian habitats for purposes of foraging, cover, reproduction, or water. Many birds of prey and neotropical migrants are heavily dependent upon riparian habitats. These birds include: peregrine falcon, prairie falcon, yellow-billed cuckoo, common yellowthroat, blue grosbeak, broad-tailed hummingbird, Lucy’s warbler, southwest willow flycatcher, and owl species, including the Mexican spotted owl. Many classes of mammals as well as amphibians, such as woodhouse’s toad, red-spotted toad, and northern leopard frog, and several reptiles are highly dependent upon streams, seeps, and springs. Management practices within riparian areas should encourage the recruitment of woody deciduous species in order to provide for multiple age classes. Well vegetated banks comprised of sedges, rushes, and other aquatic plants are important for habitat qualities and bank stability. Clean water quality is important to maintain. Seasonal restrictions may be necessary in order to provide for successful nesting of some critical bird species, such as southwest willow flycatcher and Mexican spotted owl. A mosaic of various canopy closures should be provided for those species that need dense cover. Spring sources should be protected from negative impacts in order to protect water quality and vegetative features, as well as provide unimpaired access by wildlife.

Riparian Cover

Functional Group	% Cover Range	Common species
Trees	0-25	Fremont’s cottonwood, Narrowleaf cottonwood, River Birch, Box elder
Shrubs	10-40	Coyote willow, Yellow willow, Western virgin’s bower, Greasewood
Grasses	40-60	Scratch grass, Inland salt grass, Wiregrass, Olney’s threesquare
Forbs	5-15	Louisiana wormwood, Yellow monkeyflower, Silver leaf milkvetch, Slender seepweed.
Biological soil crust	0-20	
Litter	10-30	
Bare ground	0-20	

SAGEBRUSH GRASSLAND

Sagebrush-Grassland comprises approximately 190,668 acres (8%) of the Monument. Sagebrush grasslands typically replace desert shrub communities in areas of higher elevation and precipitation. Several types of sagebrush communities may exist depending on whether the dominant species of sagebrush is Basin big sagebrush, Wyoming big sagebrush, Black sagebrush, or Sand sagebrush. Some generalities in plant community structure can be made for the purpose of DPC. Sagebrush (primarily *Artemisia tridentata*) communities would consist of a healthy, diverse mosaic of different height and age structures with a thriving community of native grasses and forbs. Several seral stages comprised of Early (5%), Middle (40%), Late (25%), and Old (30%) classifications include stands of young and old sagebrush, openings (ranging to short or sparse vegetation to high density grasslands) and interspersed shrub and savannah habitats with differing amounts of grass, forb, shrub, and tree cover in each. Sagebrush grassland communities would be managed for no net loss (long-term or permanent removal from the landscape). A no net loss objective would not preclude restoration, rehabilitation, or related management actions. Native grass and forb cover would be maintained or increased in balance with open to moderate (5 to 25%) shrub canopy cover and within ecological site potential. Perennial grass components would be maintained or increased at or above 30%, with cool season grasses comprising at least 50% of the grass component. Native forb composition would be maintained at or above 5%. Common species that occur in the sagebrush grassland include Utah juniper, Big sagebrush, Indian ricegrass, and globemallow. In general the seral stages would be composed of a variety of age classes, with a thriving and viable community of native grasses, forbs, and shrubs.

Treatment Goals:

Treatment objectives in sagebrush grassland communities would focus on restoring natural disturbance processes, increasing vegetation ground cover of native grasses and forbs, removing invasive non-native plants, and restoring soil and hydrological function. Sagebrush grassland stands that exhibit a high amount (40-60%) of shrub decadence would be targeted for restoration activities. Fragmentation of sagebrush habitat would be held to less than 50% of the treatment area.

Wildlife Habitat:

Existing stands of sagebrush (primarily *A. tridentata*) would be managed for a balance between shrub and perennial grass cover, for open to moderate shrub canopy cover (5-25%) and multiple height classes. This mosaic would include young, sparse stands to support vesper sparrows and lark sparrows, and older, dense stands to benefit Brewer's sparrows, sage sparrows, black-throated sparrows, gray flycatchers, and sage thrashers. Shrub habitats would be maintained with small, grassy openings to support long-billed curlews, and burrowing owls. Large, continuous blocks (≥ 300 acres) of unfragmented sagebrush habitat would be maintained, including mosaics of open to moderate shrub canopy cover (5-25%) and multiple age and height classes to benefit sage-dependent species. Openings of short vegetation surrounded by sagebrush would be maintained for ground foraging by sage thrashers, loggerhead shrikes, Brewer's sparrows, and sage sparrows. Openings of short vegetation (5-20 cm; 2-8 in) with wide visibility would be maintained to provide breeding habitat for long-billed curlew and burrowing owls. For sage grouse habitats, create an age mosaic of sagebrush. Encourage the production of forb species and restrict grazing activities around leks and brood rearing areas. Guidelines for sage grouse habitat will be followed on a site specific basis when treatments are proposed.

The percent cover expected in each type of sagebrush community varies widely. Nonetheless, broad cover categories can be generalized. In sagebrush grasslands, grass cover should range between 30-60%.

Sagebrush-Grassland Seral Stages and Cover

Seral Stage	Early Grass-Forb	Middle Grass/Forb/Shrub/Young PJ	Late Decadent shrub with PJ, decrease in understory	Old Old growth character, limited understory
Percent of Cover Type	5-15	15-30	30-40	30-40
Trees	0	5-10	10-20	25-50
Shrubs	0-25	25-45	45-60	15-45
Grasses	10-25	10-20	5-20	0-10
Forbs	5-20	5-15	5-10	0-5
Biological soil crust	0-10	5-25	5-25	5-25
Litter	5-25	5-25	5-20	5-15
Bare ground	30-40	30-40	40-60	40-70
Exotics	5-15	0-5	5-10	5-10

Common Species in Sagebrush Grassland Cover

Functional Group	Common species
Trees	Utah juniper, Pinyon pine
Shrubs	Big sagebrush, Bigelow sagebrush, Sand sage, Mormon tea, Winterfat, Four-wing saltbrush, Small rabbitbrush, Rubber rabbitbrush, Broom snakeweed
Grasses	Indian ricegrass, Needle-and-thread grass, Sand dropseed, Mutton grass, Galleta, Blue grama, Squirreltail grass
Forbs	Globemallow, Bird's beak, Cryptantha, Swertia, Buckwheat

SEEDINGS

Areas of vegetation manipulation or “seedings” comprise approximately 5,768 acres (0.25%) of the Monument. The majority of these areas were formerly sagebrush grassland or Pinyon–juniper vegetation types that were converted to grasslands containing both native and non-native desirable grasses. Though a relatively minor component of BLM administered lands in this area, these seedings provide a valued forage base for livestock and wildlife throughout the Monument. Most of these seedings were established under cooperative agreement with grazing permittees. In order for these seedings to function according to cooperative agreements, an emphasis should be placed on maintaining grass cover. Grass cover should be maintained or increased to at least 20% cover. Forbs should contribute approximately 5% and shrubs should be at least 15%.

Treatment Goals:

Treatment objectives in “seeding” vegetation communities would focus on restoring them to production levels consistent with established cooperative agreements, increasing the vegetation ground cover of desirable grasses, forbs, and shrubs, and removing invasive species. An emphasis will be placed on treating areas damaged or lost due to drought, those where special status species are a concern and also those that have exceeded their life expectancy. Treatment objectives will be determined on a site specific basis and adhere to criteria established in the Monument Plan.

Wildlife Habitat:

These seedings comprise rangeland treatments in sagebrush-grassland and Pinyon-juniper vegetation types. As such, they are adjacent to or surrounded by these native landscapes. As a consequence of this, those wildlife species found in these types would normally be represented, in part, within these areas. These seedings are generally in close proximity to water developments which also tend to concentrate game animals and certain neotropical birds in these seedings. Many of these seedings replaced the formal native plant community with non-native grass species that are lacking in those habitat structural qualities needed by wildlife that are represented in the native vegetation community. Many of these seedings have subsequently been invaded by noxious weeds and non-native invasive species, further degrading the area’s value for wildlife.

In order to restore or maintain those habitat qualities important to upland game and neotropical bird species that use these seedings, it is desirable to manage for structure in the vegetation community. Seedings should have a mixture of native shrubs, grasses, and forbs which would represent the species composition percentages of the original plant community. This may involve restoration activities comprised of re-seeding the area and/or applying treatments to control or eradicate noxious and invasive weed species. Timing and intensity of livestock grazing should be done in order to accommodate the forage, nesting, and breeding needs of wildlife, especially shrub and ground nesting birds.

Seeding Cover

Functional Group	% Cover Range	Common species
Trees	0-5	Utah juniper, Pinyon pine
Shrubs	15-30	Four-wing saltbush, Winterfat, Bitterbrush, Big sagebrush
Grasses	20-50	Crested wheatgrass, Western wheatgrass, Russian wildrye, Indian ricegrass, Squirrel tail, Mutton grass, Needle-and-thread grass
Forbs	5-10	Globemallow
Biological soil crust	14	
Litter	10-25	
Bare ground	10-30	